the potential being reckoned 1, then when a stratum was straddled the potential was 1·243, 1·229.

On testing two idle wires distant $\frac{5}{8}$ inch (1·6 centims.) apart with a Thomson-Becker galvanometer, the current in this fractional part of a tube was found to go frequently in the reverse direction to that of the main current, and when the galvanometer was connected to two idle wires diametrically opposite, currents were indicated sometimes in one direction, sometimes in another across the tube (Fig. 8). These experiments seem to indicate that there are eddies in the gas during a discharge, as if the motion of the molecules conveying an electric discharge was of an epicycloidal character. The authors conclude by saying that it is possible that the eddies may be connected with the production of strata.

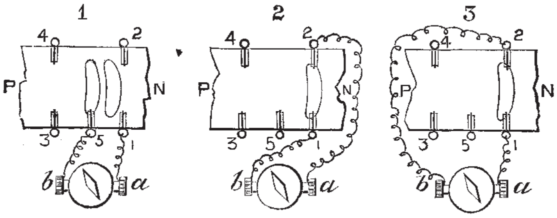

FIG. 8.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—We are requested to announce that the Savilian Professorship of Geometry is vacant, and an election to the office will be held before the end of Michaelmas Term (December 17). A Fellowship in New College is now annexed to the Professorship. The duty of the Professor is to lecture and give instruction in Pure and Analytical Geometry.

The combined emoluments of the office from both sources will be, for the present, 700*l.* a year, but may possibly hereafter be increased to an amount not exceeding 900*l.* a year.

Candidates are requested to send to the Registrar of the University their applications, and any documents which they may wish to submit to the electors, on or before Wednesday, October 31.

SCIENTIFIC SERIALS

Bulletin of the Belgian Royal Academy of Sciences, June.—On the action of amygdaline during the germination of bitter almonds, by M. A. Jorissen.—Determination of the specific heat of some organic bodies; variations experienced by this quantity through change of temperature, by M. de Heen. Of the eleven substances examined, three only—the formic salts of sodium, calcium, and barium—maintained a perceptibly constant specific heat within the limits of a temperature ranging from 10° to 93° C. A considerable increase of specific heat was shown by most of the other bodies tested.—Note on a double series of equations, by M. E. Catelan.—Anatomical study of the Æschnines (*Æ. grandis* and *heros*), by Baron Edm. de Selys Longchamps. Appended is a complete tabulated classification of the Æschnideæ (Æschna of Fabricius and Latreille).—On a deposit of *Oldhamia radiata* (Forbes) recently discovered in Tubize, Brabant, by M. C. Malaise. From its position in the Brabant schistose system the author is induced to refer this rock to the Lower Cambrian formations.—Attempted determination of the relation $\frac{C}{A}$ of the principal momenta of inertia in the terrestial spheroid, by M. E. Ronkar. In this paper a twofold series of calculations are made, based respectively on the hypotheses of Lipschitz and Laplace regarding the mean density of the crust of the earth.—Note by the editor on the explanation of the prevailing blue colour in large volumes of pure water advanced by M. Montigny.

Annalen der Physik und Chemie, July. — Electrical researches, by G. Quincke.—Researches on the slow discharge, by Heinrich Hertz, with six diagrams.—On the difference in the discharge from the positive and negative electrodes, by H. Hellman of Riga.—New observations on the thermo- and actino-electricity of rock crystal as a reply to a memoir of C. Freidel and J. Curie, by W. Hankel.—On the variation of the magnetic coefficient with the hardness of steel, by Hugo Meyer.—On the coefficient of friction of mercury and its variation with the temperature, by Synesius Koch, with three diagrams.—Theory of light for perfectly transparent light, by W. Voigt.—Concerning the theory of light, by E. Lommel.—On the sound of impinging flames, by K. Noack (three diagrams).—A new apparatus for showing Foucault's streams, by Dr. A. von Waltenhofen.—On the relation between the fundamental note and overtones of transverse vibrations in open metal cylinders, by Hugo Feukner.—On the reciprocal of the strain of closely-tuned elastic bodies, by Dr. G. Krebs.

SOCIETIES AND ACADEMIES

SYDNEY

Linnean Society of New South Wales, June 27.—Prof. W. J. Stephens, M.A., in the chair.—The following papers were read:—Descriptions of new genera and species of fishes by Charles W. De Vis, B.A. Two genera are described, *Dactylophora* of the family *Cirrhitidæ*, and *Leme* of the family *Amblyopina*. The new species described are: *Girella carbonaria*, *Girella neuralis*, *Dactylophora semimaculata*, *Platycephalus semermis*, *Polynemus specularis*, *Leme mordax*, *Sphyræna strenua*, *Trochocopus sanguinolentus*, *Labrichthys dux*, *Plagusia notata*, *Synaptura cinerea*, and *Crossorhinus ornatus*.—A fourth paper on plants indigenous in the immediate neighbourhood of Sydney, by Mr. E. Haviland.—Localities of some species of Polynesian recent mollusca, by John Brazier, C.M.Z.S., &c.

PARIS

Academy of Sciences, August 6.—M. Blanchard, president, in the chair.—Preliminary reports on the transit of Venus, December 2, 1882, at the Transit Stations of Haiti, by MM. D'Abbadie, Callandreau, and Chapuis; of Mexico, by MM. Bouquet de la Grye, Héraud, and Arago; of Martinique, by MM. Tisserand, Bigourdan, and Puiseux; of Florida, by M. Perrier; of Patagonia, by M. Fleuriais; of Chili, by MM. de Bernardières, Barnaud, and Favereau; of Chubut, by M. Hatt; of Monte Video, by M. de Penfentenyo; of Rio-Negro, by M. Perrotin; of Cape Horn, by M. Courcelle-Seneuil; of Bragado, by M. Perrin. These reports, deposited with the Secretary of the Academy on the return of the several expeditions, are here collected together for the convenience of astronomical students.—Active or dynamic resistance of solids. Graphic representation of the laws of longitudinal thrust applied to one end of a prismatic rod, the other end of which is fixed (concluded), by MM. de Saint-Venant and Flamant.—In reply to a recent communication by M. Jamin on the critical point of liquefied gases, a letter was read from Mr. W. Ramsay, who claims priority of discovery, and points out that he had already determined the critical point in a memoir which appeared in the *Proceedings of the Royal Society* for April 22 and December 16, 1880.—On the application of Ampère's method to the investigation of the elementary law of electric induction by variation of intensity, by M. Quet.—On boron, by M. A. Joly. In this paper the author determines the existence of a combination of boron and carbon, reserving for a future communication a study of the various compounds containing these two elements.—On the blood plaquettes of M. Bizzozero, and on Norris's third or invisible blood corpuscle, by M. G. Hayem. It is shown that the so-called "plaquettes," claimed by Bizzozero as a new discovery in the Italian *Archives of Biology* for January, 1882, *et seq.*, are simply the "hæmatoblasts" already described by M. Hayem. On the other hand Norris's "third or invisible corpuscle," which had been identified with the hæmatoblasts, appears not to be a new element at all, but merely an artificial product resulting from the various manipulations to which the blood had been subjected by the English observer.—Experimental researches on some phenomena relative to the absorption of animal fats, by M. A. Lebedeff.—On the true character of the ophthalmic affection known as astigmatic keratite, by M. G. Martin.—New researches on the curve of the muscular shock in various affections of the nervo-muscular system, with three illustrations, by M. Maurice Mendelssohn.—Influence of sea water on freshwater animals, and of fresh water on marine fauna, by M. Felix Plateau.—On barometric pressure in connection with igneous eruptions, by M. Fr. Laur. It is argued that gaseous and other eruptions are due exclusively to rapid variations of atmospheric pressure.

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BERLIN

Physiological Society, July 20.—Prof. Kronecker reported a number of investigations recently carried out in the division of the Physiological Institute under his care: Dr. Openschewsky had continued his observations, communicated at the meeting of June 15 (NATURE, vol. xxviii. p. 264), regarding the influence of the vagus on rhythmical movements of the cardia produced by artificial anæmia. As the result of his further examination he found that the vagus sent two branches of nerves to the cardia: one causing its contraction, the other, when alone stimulated, its dilatation. In the vagus trunk the enlarging nerves were in the preponderance, and, on the whole of the vagus being stimulated, induced an interception of the contractions of the cardia. In a demonstration of the experiment it was shown that after destruction of the stimulating branch of the vagus the irritation of its trunk invariably provoked dilatations of the cardia.—Dr. Jacub had made experiments regarding the strength and rhythm of the movements of the uterus, and regarding the influence on these movements of a number of substances, such as secale, ether, chloral, strychnine.—Herr Aronsohn had instituted a long series of observations on the physiology of smell, observations which he himself communicated to the meeting. It is well known that Weber, from experiments made with eau-de-cologne, had laid down the statement hitherto universally accepted that gaseous substances were alone capable of stimulating the extremities of the olfactory nerves. In opposition, however, to this doctrine there was the fact of fishes being able to smell, a fact Herr Aronsohn conclusively established. Ants' eggs, which are greedily devoured by goldfishes, he saturated with a strong flavour of asafœtida, and on placing them within reach of a number of hungry goldfishes they all darted away from the otherwise savoury food. He therefore repeated Weber's experiment exactly in the manner prescribed, and had, like him, his sense of smell affected only during the infusion of the eau-de-cologne solution. Immediately, however, such an intense sensation of pain was experienced, that the experiment had very soon to be abandoned. It was evident that Weber's solution was much too concentrated, and that in order to achieve trustworthy results dilutions of much larger proportion would have to be made use of. Moreover, for the purpose of solution, instead of the water which produced so powerful an effect on the tissue, the common salt solution of ·6 per cent., which was of indifferent effect, would require to be employed. Finally the due temperature would have to be imparted to the fluid. Under these conditions a long series of experiments was now instituted with oil of nettles, camphor, eau-de-cologne, and other smelling substances. In far the greater number of cases these experiments yielded positive results. Granted that the solutions had the necessary degree of dilution (which among the different materials varied from ·1 to ·001 per cent.) and the due temperature (which might range from 37° to 62° C., though from 40° to 44° C. proved the most suitable), then on their application to the nostrils a decided and lasting smell was perceived. These experiments were not only carried out by Herr Aronsohn himself, but were repeated by other competent observers, the due degrees of dilution and temperature, which differed according to the different observers, producing always the same effect. The result in the one case as in the other was invariably positive, and went to refute the hitherto current notion that gaseous substances alone affected the sense of smell and that fluids had no effect on the olfactory nerves. On emptying out the fluid there was mostly always left a scent of which one remained sensible for a very considerable time. Contrary to former declarations, the breath emitted from the lungs also decidedly affected the olfactory nerves, provided the experiment were conducted in such a way that the particles to be smelled on expiration could reach the upper parts of the nostril. Herr Aronsohn finally made observations tending to establish the liability to weariness of the sense of smell, a fact of which any one might readily convince himself by the following experiment:—Let him take two roses, A and B, as like each other as possible; let him now first smell A for fifteen consecutive seconds, and then on trying B he will find it has very much less scent, or none at all. Let the olfactory sense now recover itself, and then let him, conversely, first smell B for fifteen seconds, and pass to A; he will now find the same defective or negative scent in A as formerly in B.—Dr. Kireef directed his observations towards the discovery of the conditions determining the fact that now and again, by the cutting of one carotid animals could not be bled, but in order to this end a second carotid must also be cut. In the pursuit of this problem a series of important facts came to light demanding further searching study, and which therefore can here for the present only be alluded to. In all the larger arteries it has been observed that on the cutting of a blood vessel only a certain fraction of the total blood, from about two-thirds to five-sevenths, runs away, and then without any visible cause the bleeding stops, though the wound is still gaping wide, and no trombus is forthcoming. Let another equally large artery be opened, and a quantity of blood, often considerable, will issue from it in turn, and then of itself cease; and still a third artery may be cut, which will again yield a further bleeding. The quantity of blood circulating in the body has no influence on this phenomenon. From a certain artery the same quantity of blood was discharged, alike whether a ·6 per cent solution of common salt was beforehand largely injected into the animal, or a portion of blood withdrawn from it beforehand. Just as little influence has the blood pressure on the quantity of blood shed through the cutting of a larger artery. In an animal one *arteria femoralis* was freely cleared out of its integuments for a considerable extent of its surroundings, while another was left in its natural position. The last on being cut shed a certain quantity of blood at double the speed, *i.e.* in half the time taken by the freely cleared artery. The vagus showed a very remarkable influence on the bleeding from a cut artery, an influence to be further traced and demonstrated in the continuation of the experiments.

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